

# Work Order ID 63986



Page 1

Monday, November 22, 2010 2:54:50 PM

Item ID: D412-664-203

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Aft

Start Date: 11/22/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 11/30/2010 Req'd Qty: 1.00

Customer:

Reference:

Approvals:

Process Plan:

Date:

10/1/22

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start



Stop



Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

Draw Nbr

Revision Nbr

D412-664-243

E

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D412-664-203 CHG 006

Sub 10/1/07

CK for Bcr 11/01/06

110

0.00



Packaging

Packaging

Memo

0.00

Packaging

DP 10-12-15

120

0.00



BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D412-664-243 using CNC bender program 412-aft and Folio FT010

DP 10-12-15

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

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Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

130



QC

Quality Control

QC15- Crosstube Dimensional Check

0.00

Memo

0.00

140



Crosstubes

Crosstubes

Crosstubes

Memo

0.00

0.00

1-Drill pilot holes in tube as per Dwg D412-664-243 using drill Jig DT8550 & DT8551 and drill table DT8577 using #9 holes as per QSI 10 to install towers.

2-Ream hole to finish size in tube as per Dwg D412-664-243 using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-SCRIBE PART # & BATCH #

4-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243



SAD  
10-12-16  
SAD  
10-12-20

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
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|      |      |                    |    |      |     |                                     |                          |

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|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

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Run Start

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

150

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

SAD  
10-12-20

①

160

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

8/10/12/20

170

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

8/10/12/20

④

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
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|      |      |                    |    |      |     |                                     |                          |

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|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

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Run Start



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop



| Sequence ID/<br>Work Center ID | Operation<br>Description   | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 180<br>                        | Outsource process - NDT per QSI038 4.1   | 0.00                 |         |        |              |               |               |                  |                |
| Outsource2                     | <b>Memo</b>  | 0.00                 |         |        |              |               |               |                  |                |
| Outsource process - NDT        | Liquid Penetrant Inspection as per QSI 038Or<br>Issue P/O: <u>13121</u> LPI as per ASTM 1417<br>Level 2 Attach copy of NDT results to work order |                      |         |        |              |               |               |                  |                |
| 190<br>                        | Packaging  | 0.00                 |         |        |              |               |               |                  |                |
| Packaging                      | <b>Memo</b>  | 0.00                 |         |        |              |               |               |                  |                |
| Packaging                      | Inspect for transit damage<br>Ensure copy of NDT results attached to work order.   |                      |         |        |              |               |               |                  |                |
| 200<br>                        | QC5- Inspect part completeness to step on W/O  | 0.00                 |         |        |              |               |               |                  |                |
| QC                             | <b>Memo</b>  | 0.00                 |         |        |              |               |               |                  |                |
| Quality Control                | Inspect for damage & ensure results are as per Dwg D412-664-203  |                      |         |        |              |               |               |                  |                |

CL 10/12/21 (1)

10/12/21 (1)

ml 10 12 21 (1)

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
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|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

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|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

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Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



Stop



| Sequence ID/<br>Work Center ID | Operation<br>Description   | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 210                            |  | 0.00                 |         |        |              |               |               |                  |                |
|                                | SprayPaint   |                      |         |        |              |               |               |                  |                |
| SprayPaint                     | Memo   | 0.00                 |         |        |              |               |               |                  |                |
| Spray Painting                 | 1-Prime inside and outside crosstube as per QSI 005 4.2<br>2-Paint outside crosstube with White Imron as per QSI 005 4.2<br>PRIME:<br>Start Time: <u>7:00</u><br>Finish Time: <u>7:30</u><br>PAINT:<br>Start Time: <u>11:30</u><br>Finish Time: <u>12:30</u> |                      |         |        |              |               |               |                  |                |
| 220                            |  | 0.00                 |         |        |              |               |               |                  |                |
|                                | QC14- Inspect Spray Paint  |                      |         |        |              |               |               |                  |                |
| QC                             | Memo   | 0.00                 |         |        |              |               |               |                  |                |
| Quality Control                | Then, Wrap in plastic bag to protect from scratches  |                      |         |        |              |               |               |                  |                |

ml 10 12 22 ①

3T 11-01-04

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

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Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

| Sequence ID/<br>Work Center ID | Operation<br>Description   | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 230                            |  | 0.00                 |         |        |              |               |               |                  |                |
|                                | Crosstubes   |                      |         |        |              | <u>W</u>      | <u>11</u>     | <u>01</u>        | <u>05</u> ①    |
| Crosstubes                     | Memo   | 0.00                 |         |        |              |               |               |                  |                |
| Crosstubes                     | Assemble as per Dwg D412-664-203   |                      |         |        |              |               |               |                  |                |
|                                | 1- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe   |                      |         |        |              |               |               |                  |                |
|                                | 2-Install supports with magnobond as per QSI 015. Adhere for for 12 Hrs  |                      |         |        |              |               |               |                  |                |
|                                | A/R 6398 Magnobond Batch: <u>115580</u>  |                      |         |        |              |               |               |                  |                |
|                                | Expiry Date: <u>07/2011</u>  |                      |         |        |              |               |               |                  |                |
|                                | 3-Install clamps as per Dwg D212-664-203 using installaiton jig DT9024 with 0.010 thick brass shims on both chafing sheild (D3189-1). Torque clamps to 80-100 in lb. <u>W 11-01-06 ①</u> |                      |         |        |              |               |               |                  |                |
| 240                            |  | 0.00                 |         |        |              |               |               |                  |                |
|                                | QC5- Inspect part completeness to step on W/O  |                      |         |        |              |               |               |                  |                |
| QC                             | Memo   | 0.00                 |         |        |              |               |               |                  |                |
| Quality Control                |  |                      |         |        |              |               |               |                  |                |

8/1/06

HC

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

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|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

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Stop



| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

250

Pick Kit

0.00



Packaging

Memo

0.00

Packaging

11/16 f

260

QC4- 100% Inspect kits for completeness

0.00



QC

Memo

0.00

Quality Control

S 11/16 7

C 11/16

270

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D412-664-203  
\*\*\*\*\*Ensure tube is not packaged if curing time is less than 12 hrs, see step 27  
for application time & date \*\*\*\*\*  
Time & date of packaging: 11/16  
Location: 103

C 11/16 70

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
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|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

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Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

280

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
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|      |      |                    |    |      |     |                                     |                          |

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|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



# Picklist Print

Monday, November 22, 2010 2:55:00 PM

Page 1

Work Order ID: 63986

Parent Item: D412-664-203

Parent Item Name: Crosstube Aft

Start Date: 11/22/2010

Required Date: 11/30/2010

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:E 04.02.16 Reformat; Added D3189-1 K/DS  
IPP Rev:F 06-03-29 Remove Comments on Pick List JLM  
IPP Rev:G 06.12.08 per ECN 886 EC  
IPP Rev:H 07-04-30 As per Rev D JLM  
IPP Rev:I 08-06-12 add comment in seq. 21 DD verified by:EC

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|

D412-664-203TRN

Manufactured

No

110

Each

3.0000

1

1



Crosstube Turning Detail

Location

Loc Qty

Loc Code

LG

3

62501

1

63399

1

63400

1

D2856-600

Manufactured

No

230

f

134.6731

1.76

1.76



Abrasion Strip

Location

Loc Qty

Loc Code

ST

0.48

37668

0.48

ST403

134.1931

25656

1.25

26650

2.5

37668

130.4431

D2896-1

Manufactured

No

230

Each

19.0000

1

1



Support

Location

Loc Qty

Loc Code

LG

19

47820

11

58356

8

10-12-14  
ml 11-01-04

ml 11-01-05

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

# Picklist Print

Monday, November 22, 2010 2:55:01 PM

Page 2

Work Order ID: 63986

Parent Item: D412-664-203

Parent Item Name: Crosstube Aft



Start Date: 11/22/2010

Required Date: 11/30/2010

Start Qty: 1.00

Required Qty: 1.00

D3189-1 Manufactured No

230

Each

22.0000

2

2



Chafing Shield

Location

Loc Qty

Loc Code

FG

2

36065

2

LG

20

58960

20

D3595-063-570 Manufactured No

230

Each

29.0000

2

2



RUBBER CUSHION

B# 42243

Location

Loc Qty

Loc Code

FG

4

37971

4

LG

25

63406

25

MS21920-28 Purchased No

230

Each

87.0000

4

4



Clamp(per MIL-DTL-8783C)

Location

Loc Qty

Loc Code

FG

5

105884

5

LG

82

114749

32

116039

50

ml 11.01.04

ml 11.01.05

ml 11.01.04

Monday, November 22, 2010 2:55:01 PM

Shop Packet Print

Page 2

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

# Picklist Print

Monday, November 22, 2010 2:55:01 PM

Page 3

Work Order ID: 63986

Parent Item: D412-664-203

Parent Item Name: Crosstube Aft

Start Date: 11/22/2010

Required Date: 11/30/2010

Start Qty: 1.00

Required Qty: 1.00

MS21920-30

Purchased

No

230

Each

106.0000

2

2



clamp(per MIL-DTL-8783C)

Location

Loc Qty

Loc Code

LG

106

109181

36

111258

50

112772

20

AN6-40A

Purchased

No

250

Each

79.0000

4

4



Bolt

Location

Loc Qty

Loc Code

ST343

79

112828

1

115300

58

115905

20

AN6-41A

Purchased

No

250

Each

48.0000

2

2



Bolt

Location

Loc Qty

Loc Code

ST344

48

113288

18

115316

30

AN960JD616

NAS1149D0663J

Purchased

No

250

Each

0.0000

18

18



Washer

Monday, November 22, 2010 2:55:01 PM

Shop Packet Print

Page 3

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

# Picklist Print

Monday, November 22, 2010 2:55:01 PM

Page 4

Work Order ID: 63986

Parent Item: D412-664-203

Parent Item Name: Crosstube Aft



Start Date: 11/22/2010

Required Date: 11/30/2010

Start Qty: 1.00

Required Qty: 1.00

MS21042L6

Purchased

No

250

Each

176.0000

6



Nut



11/1/10 SP

Location

Loc Qty

Loc Code

ST300

176

111578

4

114495

1

115300

121

116102

50

Monday, November 22, 2010 2:55:01 PM

Shop Packet Print

Page 4

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

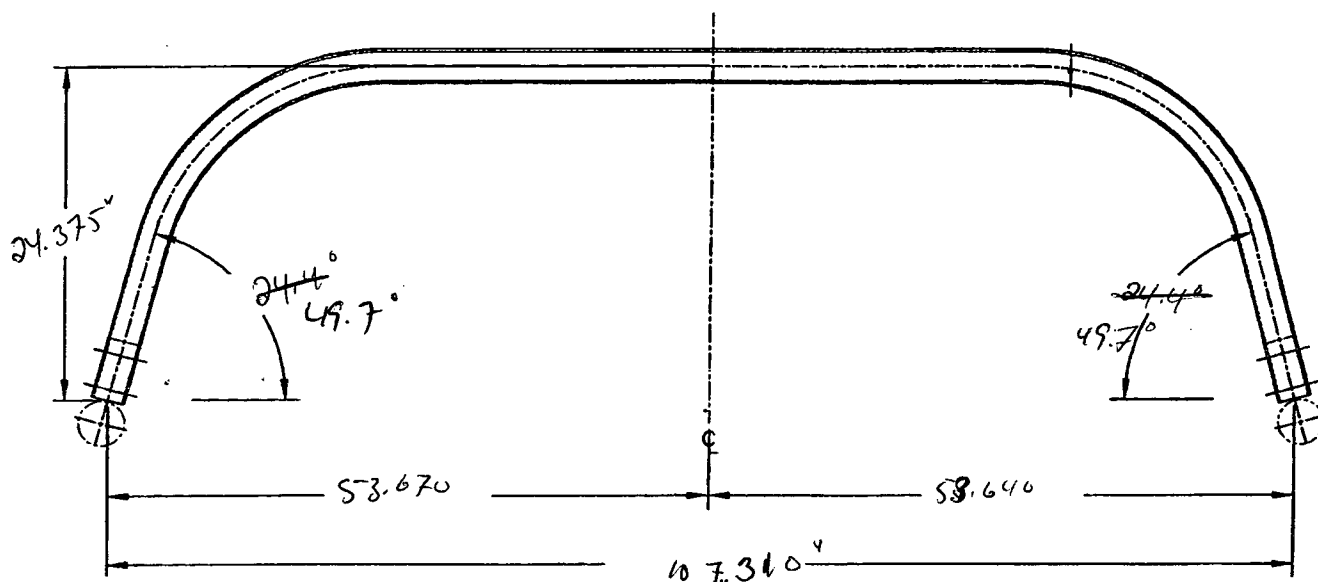
| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



|   |  |                     |              |
|---|--|---------------------|--------------|
| <b>DART AEROSPACE LTD</b>                         |  | <b>Work Order:</b>  | 63956        |
| <b>Description:</b> Crosstube High Aft (412)      |  | <b>Part Number:</b> | D412-664-203 |
| <b>Inspection Dwg:</b> D412-664-243 <b>Rev:</b> E |  | <b>Page 1 of 1</b>  |              |

| Required Dimension | Min    | Max    |
|--------------------|--------|--------|
| Height             | 24.24  | 24.50  |
| 1/2 Span           | 53.59  | 53.85  |
| Angle              | 49     | 52     |
| Total Span         | 107.18 | 107.70 |



| Comments |
|----------|
|          |
|          |
|          |
|          |

|                 |          |
|-----------------|----------|
| QC15 Inspection | S        |
| Date            | 10/12/15 |

| Rev | Date     | Change                            | Revised by | Approved |
|-----|----------|-----------------------------------|------------|----------|
| A   | 07.02.06 | New Issue                         | KJ/JM      |          |
| B   | 07.05.08 | Dimensions updated per Dwg rev. D | KJ/JLM     |          |
| C   | 10.02.02 | Dwg Rev updated                   | KJ         |          |

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

| Item | Qty<br>-243 | Part Number    | Description   |
|------|-------------|----------------|---|
| 1    | X           | D412-664-243   | CROSSTUBE ASSEMBLY (412 HIGH AFT)   |
| 2    | 1           | D6009-129      | CROSSTUBE   |
| 3    | 2           | D3595-063-570  | RUBBER CUSHION  |
| 4    | 1           | D2896-1        | SUPPORT   |
| 5    | 2           | D3189-1        | CHAFING SHIELD  |
| 6    | 2           | D2856-600-1009 | ABRASION STRIP  |
| 7    | 4           | MS21920-28     | CLAMP   |
| 8    | 2           | MS21920-30     | CLAMP (OR MS21920-32)   |
| 9    | A/R         | MAGNOBOND 6398 | ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE<br>(TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2<br>ADHESIVE) |

# **GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6009-129  
FINISHED LENGTH = 124.100±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D412-664-243" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 47.0 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-30 CLAMPS (OR -32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE THE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
- 15) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 16) TORQUE CLAMPS 80 TO 100 IN.-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 63984  
0810-11-22

**RELEASED**  
2009-10-29  
*WNP*

|            |  |   |              |
|------------|--|---|--------------|
| E          | REFORMAT/REVISE GENERAL NOTES;<br>REORGANIZED VIEWS AND REFORMATTED DRAWING<br>TO CURRENT STANDARDS; RELOCATED FLAG #6 PER<br>PAR 08-046 (ZN A6-3); ADD TOLERANCE (ZN B6-3, C4-3,<br>C8-3 & C5-3); MOVED TURNING DETAIL & UPDATED<br>TOLERANCE TO SHEET 4. | RF  | 09.09.30     |
| D          | REMOVE D2732-058, CHANGE TO D3595-063-570  | PH  | 07.03.09     |
| C          | REMOVE D2856-600-1087, ADD D2732-058 &<br>MAGNOBOND 6398, MS21920-32 WAS MS21920-30  | MB  | 06.10.27     |
| B          | ADD HOLES FOR COMPATABILITY WITH BHT/AA<br>SKIDTUBES   | PH  | 05.02.04     |
| A          | NEW ISSUE  | PH  | 01.10.17     |
| REV.       | DESCRIPTION  | BY  | DATE         |
| DESIGN     | <i>PH</i>  | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA  |              |
| DRAWN      | RF   |   |              |
| CHECKED    | <i>PH</i>  | DRAWING NO.   | REV. E       |
| MFG. APPR. | <i>PH</i>  | D412-664-243  | SHEET 1 OF 4 |
| APPROVED   | <i>PH</i>  | TITLE   | SCALE        |
| DE APPR.   | <i>PH</i>  | CROSSTUBE ASSEMBLY (412 HI AFT)   | NTS          |
| DATE       | 09.09.30   | COPYRIGHT © 2001 BY DART AEROSPACE LTD<br>THIS DOCUMENT IS PROPRIETARY AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS<br>NOT TO BE USED FOR ANY PURPOSES OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT<br>WRITTEN PERMISSION FROM DART AEROSPACE LTD. |              |

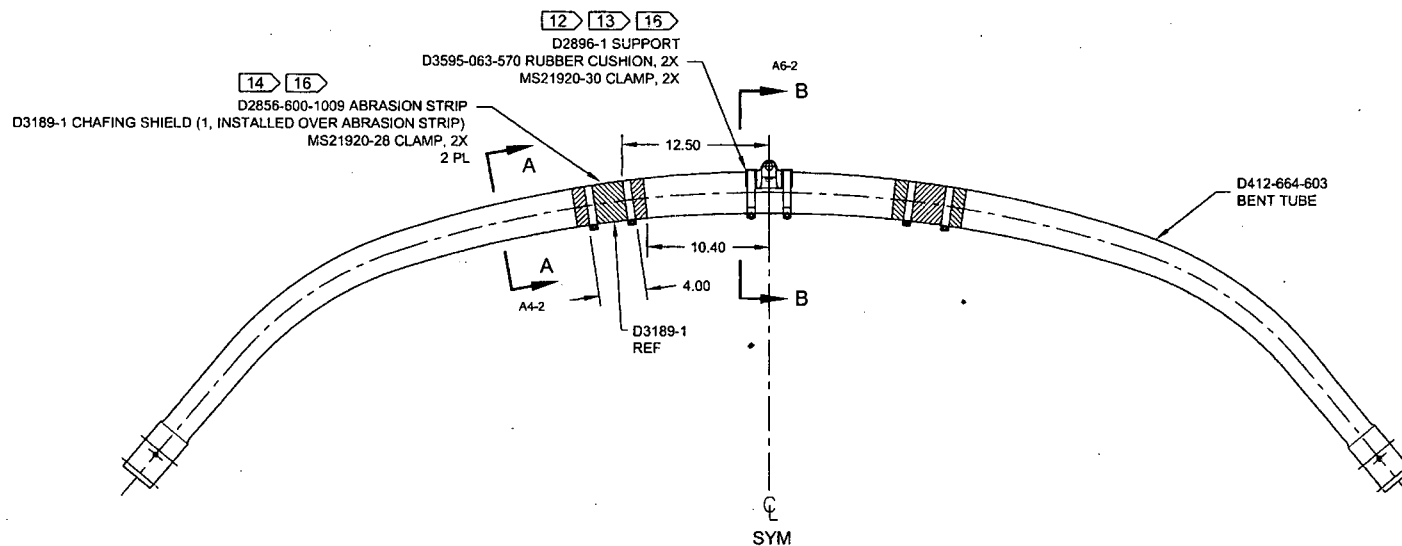
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

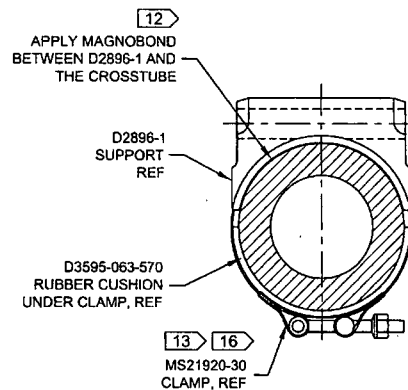
| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

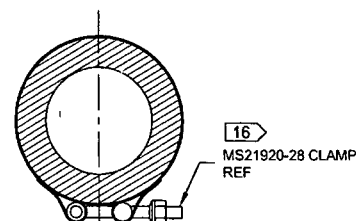


**D212-664-243  
ASSEMBLY DETAIL**

E



**SECTION B-B** D4-2  
SCALE 4X



**SECTION A-A** C6-2  
SCALE 4X

**RELEASED**  
2009-10-28  
NRP

|            |          |  |              |
|------------|----------|--|--------------|
| DESIGN     | PH       | <b>DART AEROSPACE LTD</b>  |              |
| DRAWN      | RF       | HAWKESBURY, ONTARIO, CANADA  |              |
| CHECKED    | Q        | DRAWING NO.  | REV. E       |
| MFG. APPR. | B        | D412-664-243   | SHEET 2 OF 4 |
| APPROVED   | 10       | TITLE  | SCALE        |
| DE APPR.   | 10       | CROSSTUBE ASSEMBLY (412 HI AFT)  | NTS          |
| DATE       | 09.09.30 | <small>COPYRIGHT © 2001 BY DART AEROSPACE LTD<br/>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS<br/>NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT<br/>WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small> |              |

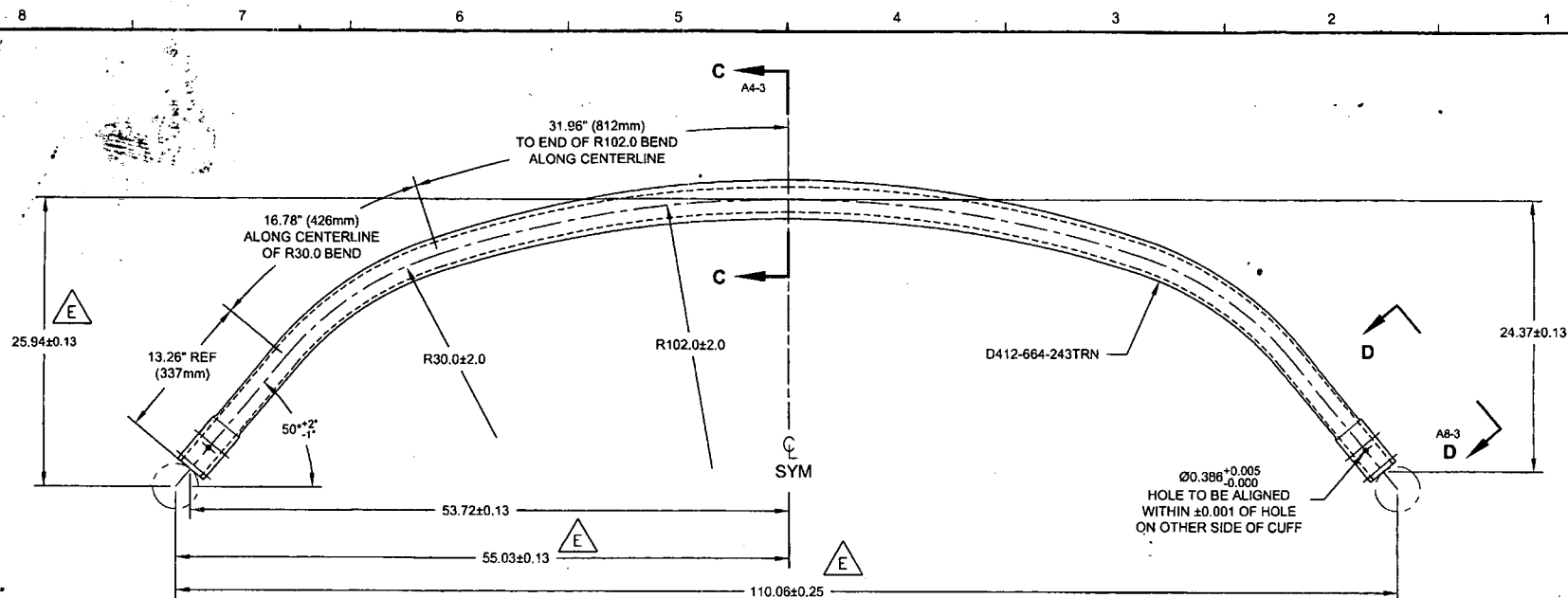
| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

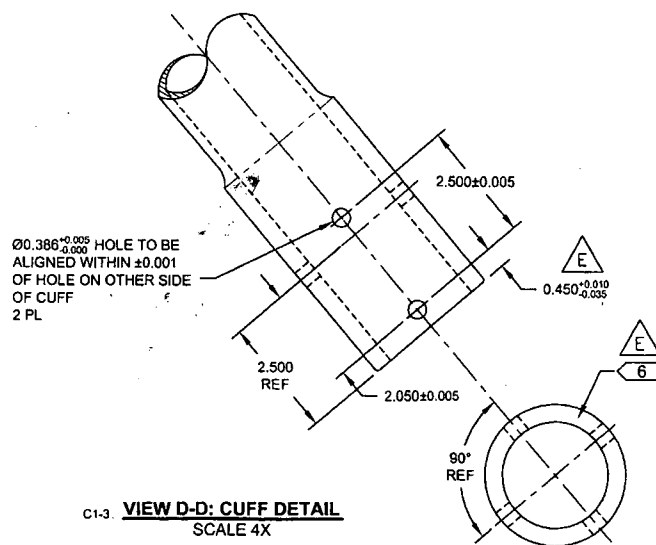
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

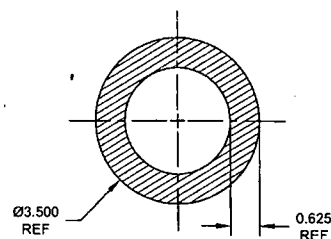
**NOTE:** Date & initial all entries



**D412-664-603** 10  
**BENDING AND DRILLING DETAIL** E



C1-3. **VIEW D-D: CUFF DETAIL**  
 SCALE 4X



**SECTION C-C** D5-3  
 SCALE 4X

**RELEASED**  
 2009-10-29  
 MP

|            |          |   |              |
|------------|----------|---|--------------|
| DESIGN     | PH       | <b>DART AEROSPACE LTD</b>   |              |
| DRAWN      | RF       | HAWKESBURY, ONTARIO, CANADA   |              |
| CHECKED    | Q        | DRAWING NO.   | REV. E       |
| MFG. APPR. | DS       | D412-664-243  | SHEET 3 OF 4 |
| APPROVED   | MP       | TITLE   | SCALE        |
| DE APPR.   | H        | CROSSTUBE ASSEMBLY (412 HI AFT)   | NTS          |
| DATE       | 09.09.30 | <small>COPYRIGHT © 2001 BY DART AEROSPACE LTD<br/>         THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small> |              |

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

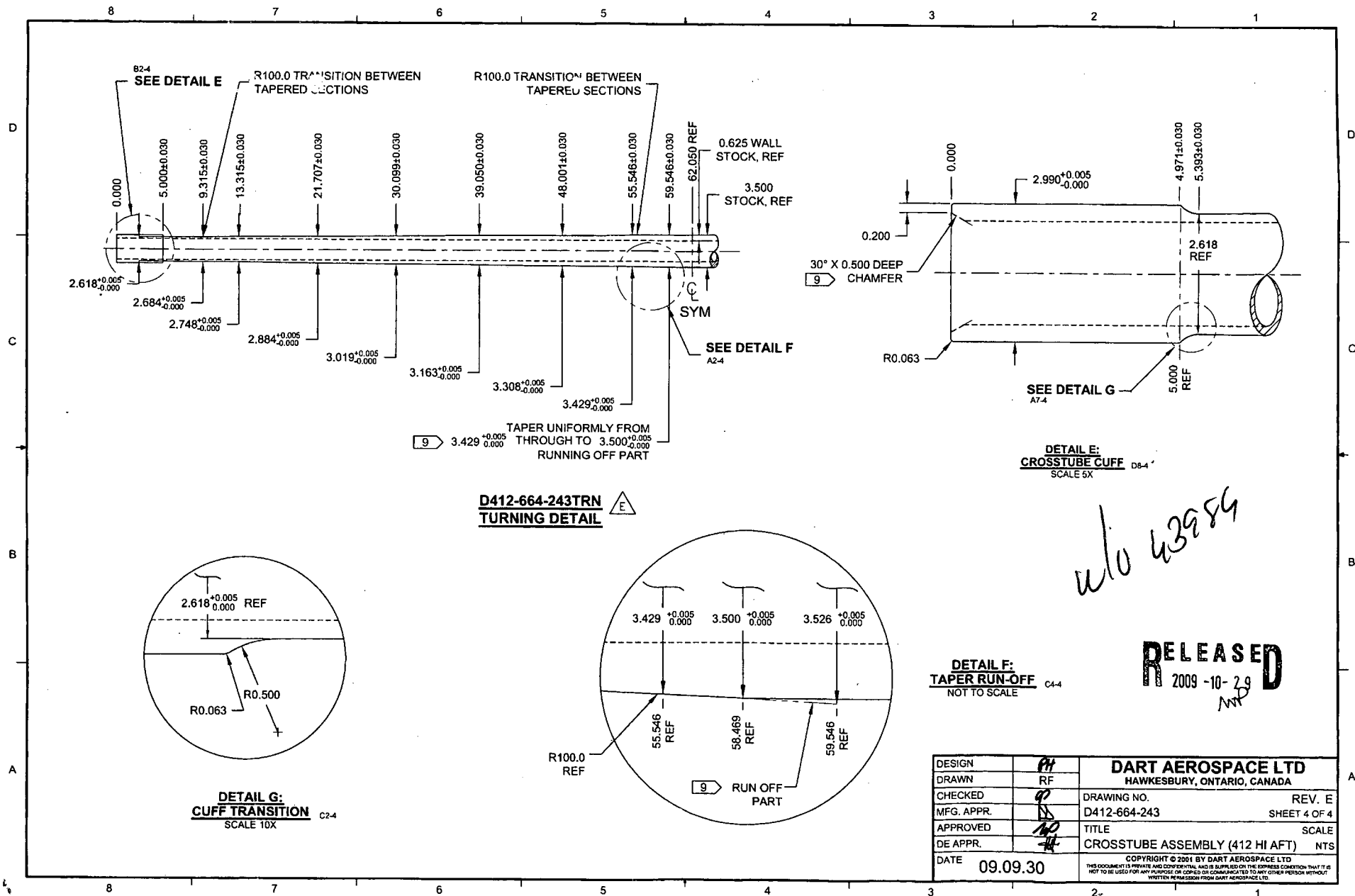
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                                |                                 |                |                           |                       |                          |
|------|------|----------------------------------|--------------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action<br>Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng           | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                                |                                 |                |                           |                       |                          |
|      |      |                                  |                                |                                 |                |                           |                       |                          |
|      |      |                                  |                                |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries





| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries



# LIQUID PENETRANT TEST REPORT

P- 15200

|                  |                                   |                 |             |               |                  |                                     |    |
|------------------|-----------------------------------|-----------------|-------------|---------------|------------------|-------------------------------------|----|
| CLIENT           | DART AEROSPACE                    | DATE            | DEC-21-2010 | PAGE          | 1                | OF                                  | 1  |
| ATTENTION        | LINDA LACELLE                     | ACUREN JOB NO.  | 188-10-0971 | TIME          | AM               | <input checked="" type="checkbox"/> | PM |
| ADDRESS          | 1270 ABELDEEN<br>HAWKESBURY, ONT. | PO/NO.          | 13181       | WORK LOCATION | HAWKESBURY PLANT |                                     |    |
| PROJECT          | FPI ON CROSS TUBES                | ACCEPTANCE STD. | ASTM 1417   | REV./DATE     | 2005             |                                     |    |
| ITEM(S) EXAMINED | 4 UNITS                           |                 |             |               |                  |                                     |    |

|                 |  |        |           |                 |               |           |           |      |
|-----------------|--|--------|-----------|-----------------|---------------|-----------|-----------|------|
| JOB DESCRIPTION | PROCEDURE NO.  | LT0002 | REV./DATE | 2008            | TECHNIQUE NO. | LT-442    | REV./DATE | 2008 |
| PART NO.        | —  |        | MATERIAL  | Audiwe Aluminum |               | THICKNESS | VARIOUS   |      |
| SCOPE           | A WET FLOUORESCENT LIQUID PENETRANT EXAMINATION.<br>WAS COMPLETED 100% EXTERNAL. |        |           |                 |               |           |           |      |

|  |   |
|--|---|
| TEST DETAILS   |   |
| METHOD   | <input checked="" type="checkbox"/> FLUORESCENT <input type="checkbox"/> VISIBLE                              |
| FAMILY BRAND   | MAGNAFLUX   |
| PENETRANT  | 2LG7 MINIMUM DWELL TIME 45X MIN.  |
| PENETRANT REMOVER  | H2O MINIMUM DRY TIME >10 MIN.   |
| DEVELOPER  | SKD 5.2 MINIMUM DWELL TIME 10 MIN.  |
| DEVELOPER TYPE   | <input checked="" type="checkbox"/> NON AQUEOUS <input type="checkbox"/> AQUEOUS <input type="checkbox"/> DRY |
| <input checked="" type="checkbox"/> WATER WASH <input type="checkbox"/> SOLVENT REMOVABLE <input type="checkbox"/> POST EMULSIFIED           |   |
| BLACK LIGHT S/N 16459 <input type="checkbox"/> OUTPUT > 1000 $\mu$ W/cm <sup>2</sup> <input type="checkbox"/> AMBIENT < 2 fc                 |   |
| LIGHTING EQUIP. <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE |   |
| OTHER LABING   |   |
| LIGHT METER S/N 1098866 CAL DUE DATE 06-19-2011  |   |

|                     |   |
|---------------------|---|
| TEST SURFACE        |   |
| SURFACE CONDITION   | <input type="checkbox"/> AS GROUND <input type="checkbox"/> AS WELDED <input checked="" type="checkbox"/> MACHINED <input type="checkbox"/> SHOT BLASTED <input checked="" type="checkbox"/> CLEAN BARE METAL |
| SURFACE TEMPERATURE | <input type="checkbox"/> < -4°C/ 20°F <input type="checkbox"/> -4°C/ 20°F TO 10°C/50°F <input checked="" type="checkbox"/> 10°C/50°F TO 52°C/125°F <input type="checkbox"/> > 52°C/125°F                      |

|          |   |
|----------|---|
| RESULTS- | <input type="checkbox"/> METRIC <input type="checkbox"/> IMPERIAL |
|----------|---|

|                           |  |
|---------------------------|--|
| 1 CROSS TUBE-W.O. 63862 ✓ |  |
| 1 CROSS TUBE-W.O. 63863 ✓ |  |
| 1 CROSS TUBE-W.O. 63986 ✓ |  |
| 1 CROSS TUBE-W.O. 63985 ✓ |  |

10-12-21

**Scope of Services**  
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

**Standard of Care**  
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## SIGNATURES

|                         |                      |                     |           |
|-------------------------|----------------------|---------------------|-----------|
| CLIENT REPRESENTATIVE   | <u>Jan Titley</u>    | DTR #               | E 63236   |
| TECHNICIAN (SIGNATURE): | <u>Mike Johnston</u> | REPORT REVIEWED BY: |           |
| NAME (PRINT):           | Mike Johnston        | NAME                | INITIALS  |
| CGSB LEVEL              | II SNT LEVEL         | CGSB LEVEL          | SNT LEVEL |
| CGSB REG. NO.           | 6606                 | CGSB REG. NO.       |           |

DART AEROSPACE LTD.

IIN-D212-664

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## 5.0 PARTS LIST

## 5.1 HIGH GEAR CROSSTUBES

| Item | -101 | -201 | -203 | Part Number      | Description  |
|------|------|------|------|------------------|--|
|      | X    |      |      | D212-664-101     | CROSSTUBE INSTALLATION,<br>204/205/210/212/214/412, UH-1H,<br>UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD |
|      |      | X    |      | D212-664-201     | CROSSTUBE INSTALLATION,<br>204/205/210/212/214, UH-1H,<br>UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT     |
|      |      |      | X    | D412-664-203     | CROSSTUBE INSTALLATION,<br>412 HIGH AFT  |
| 1    | 1    |      |      | D212-664-141     | CROSSTUBE ASSEMBLY,<br>204/205/210/212/214/412, UH-1H,<br>UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD     |
| 2    |      | 1    |      | D212-664-241     | CROSSTUBE ASSEMBLY,<br>204/205/210/212/214, UH-1H,<br>UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT         |
| 3    |      |      | 1    | D412-664-243     | CROSSTUBE ASSEMBLY,<br>412 HIGH AFT  |
| 10   | 2    |      |      | * D2893-1        | SUPPORT  |
| 11   | 4    |      |      | * D3595-063-450  | RUBBER CUSHION   |
| 12   | 4    |      |      | * MS21920-25     | CLAMP (OR MS21042-26)  |
| 13   | 4    |      |      | AN6-35A          | BOLT   |
| 14   | 4    |      |      | AN6-36A          | BOLT   |
| 15   | 6    |      |      | MS21042L6        | NUT (OR MS21042-6)   |
| 16   | 18   |      |      | AN960JD616       | WASHER   |
| 20   |      | 2    |      | * D2940-1        | SUPPORT  |
| 21   |      | 4    |      | * D3595-063-530  | RUBBER CUSHION   |
| 22   |      | 4    |      | * MS21920-28     | CLAMP (OR MS21042-30)  |
| 23   |      | 4    |      | AN6-40A          | BOLT   |
| 24   |      | 2    |      | AN6-41A          | BOLT   |
| 25   |      | 6    |      | MS21042L6        | NUT (OR MS21042-6)   |
| 26   |      | 18   |      | AN960JD616       | WASHER   |
| 30   |      |      | 1    | * D2896-1        | SUPPORT  |
| 31   |      |      | 2    | * D2856-600-1009 | ABRASION STRIP   |
| 32   |      |      | 2    | * D3595-063-570  | RUBBER CUSHION   |
| 33   |      |      | 4    | * MS21920-28     | CLAMP  |
| 34   |      |      | 2    | * MS21920-30     | CLAMP (OR MS21042-32)  |
| 35   |      |      | 4    | AN6-40A          | BOLT   |
| 36   |      |      | 2    | AN6-41A          | BOLT   |
| 37   |      |      | 6    | MS21042L6        | NUT (OR MS21042-6)   |
| 38   |      |      | 18   | AN960JD616       | WASHER   |
| 39   |      |      | 2    | * D3189-1        | CHAFING SHIELD   |
| 50   | 1    | 1    |      | D3428-1          | PLACARD  |

\*REFERENCE ONLY. PARTS ARE INCLUDED IN D212-664-141/-241 OR D412-664-243 ASSEMBLIES ABOVE  
NOTE: KITS INCLUDE EXTRA HARDWARE FOR COMPATIBILITY WITH BOTH DART AND BELL/AA  
SKIDTUBES.

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Revision: F

Date: 08.09.05